

FIGURE 1

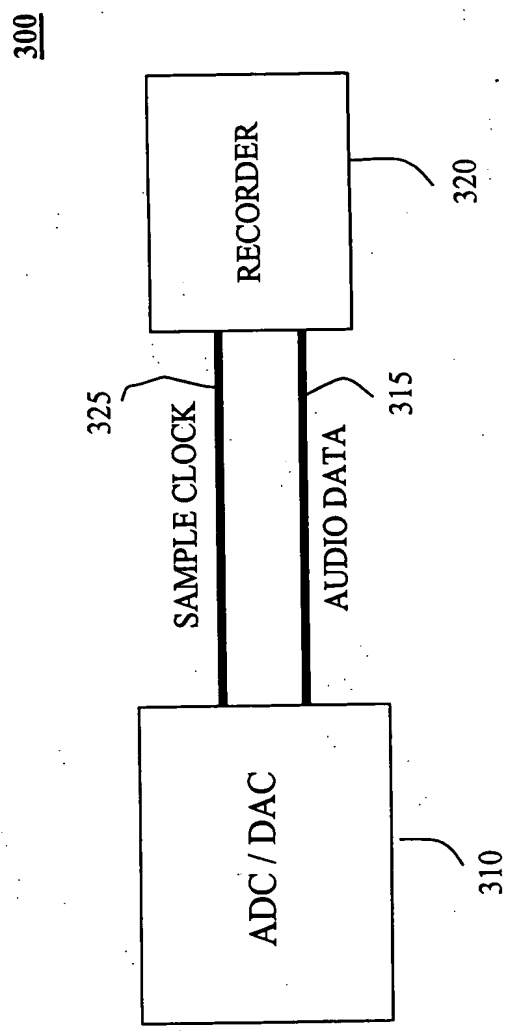


FIGURE 2

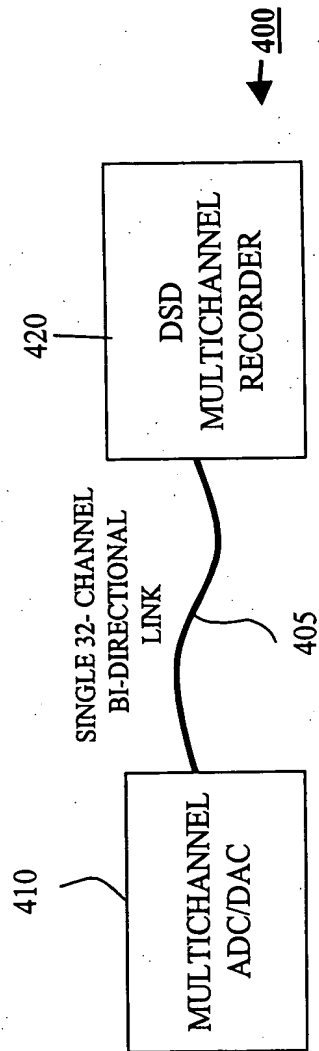
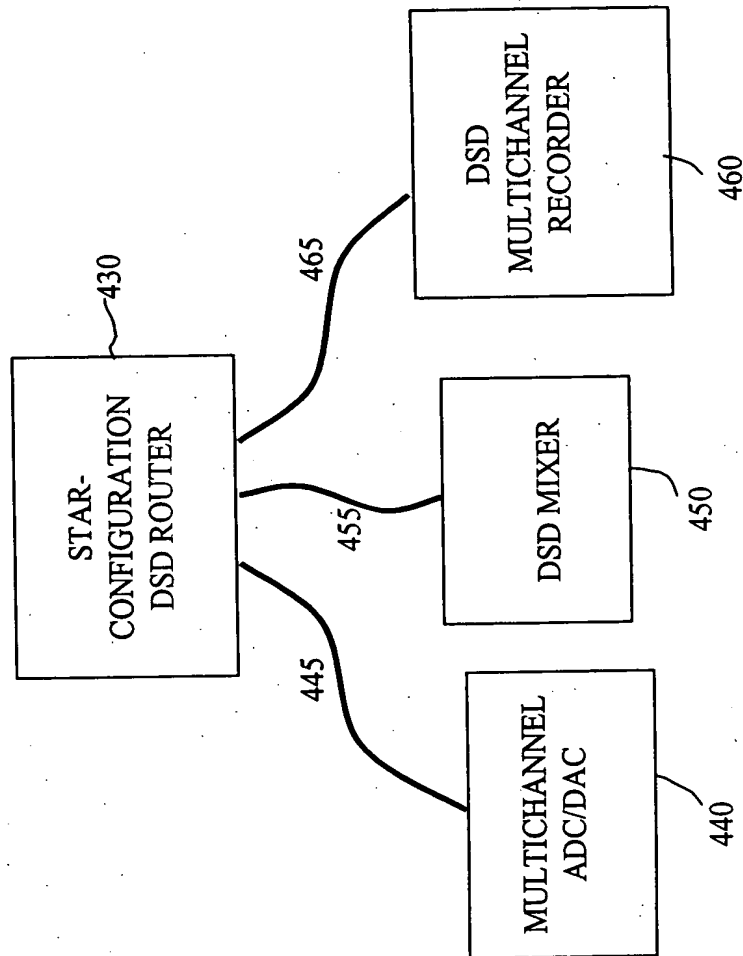


FIGURE 3

**FIGURE 4**

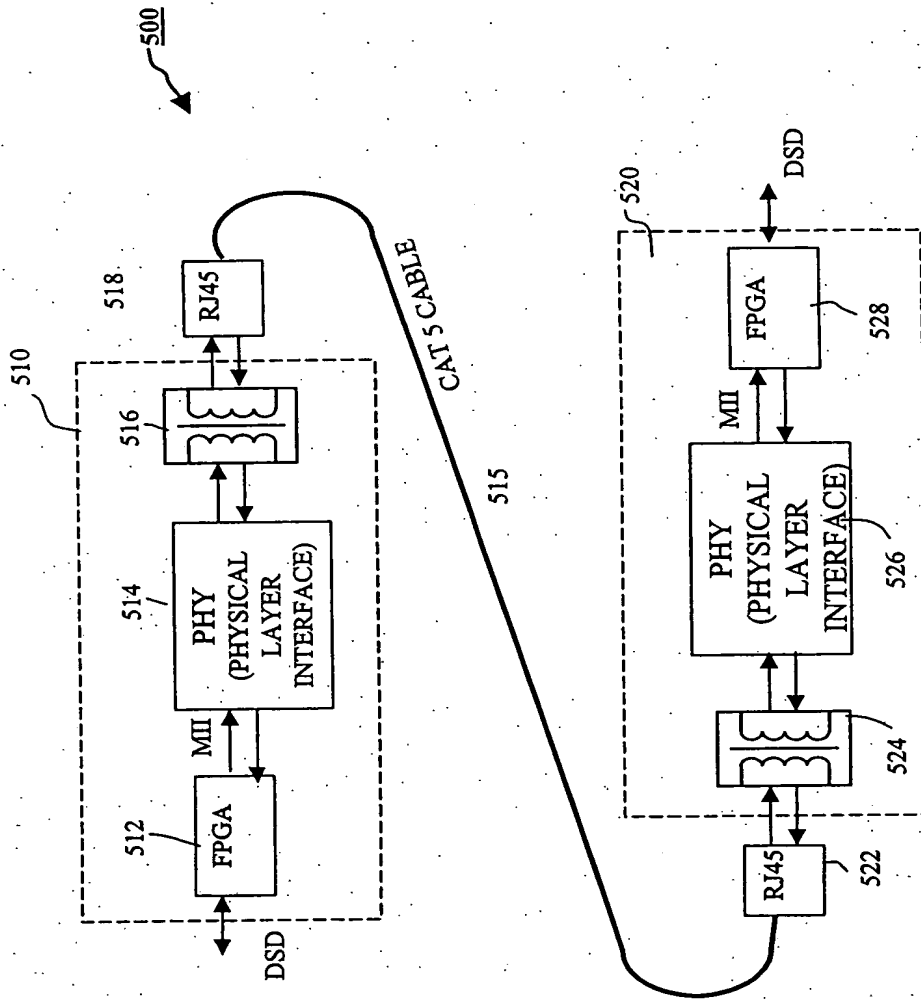


FIGURE 5

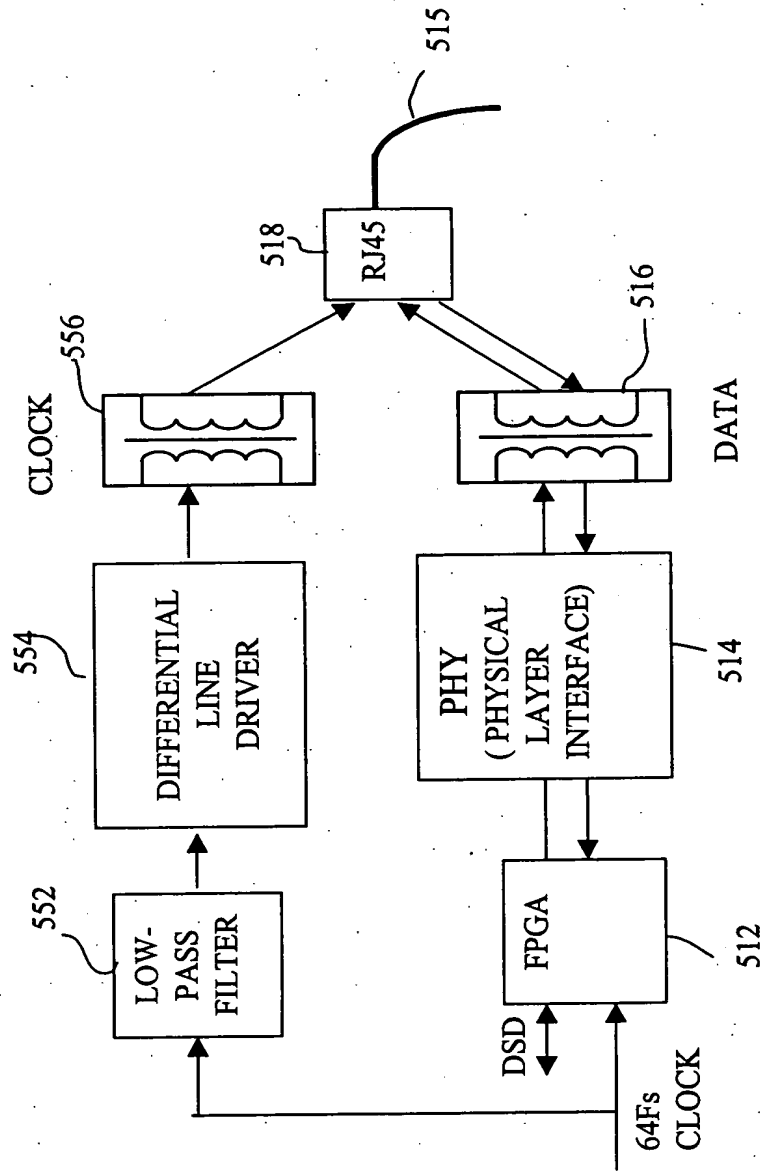


FIGURE 6

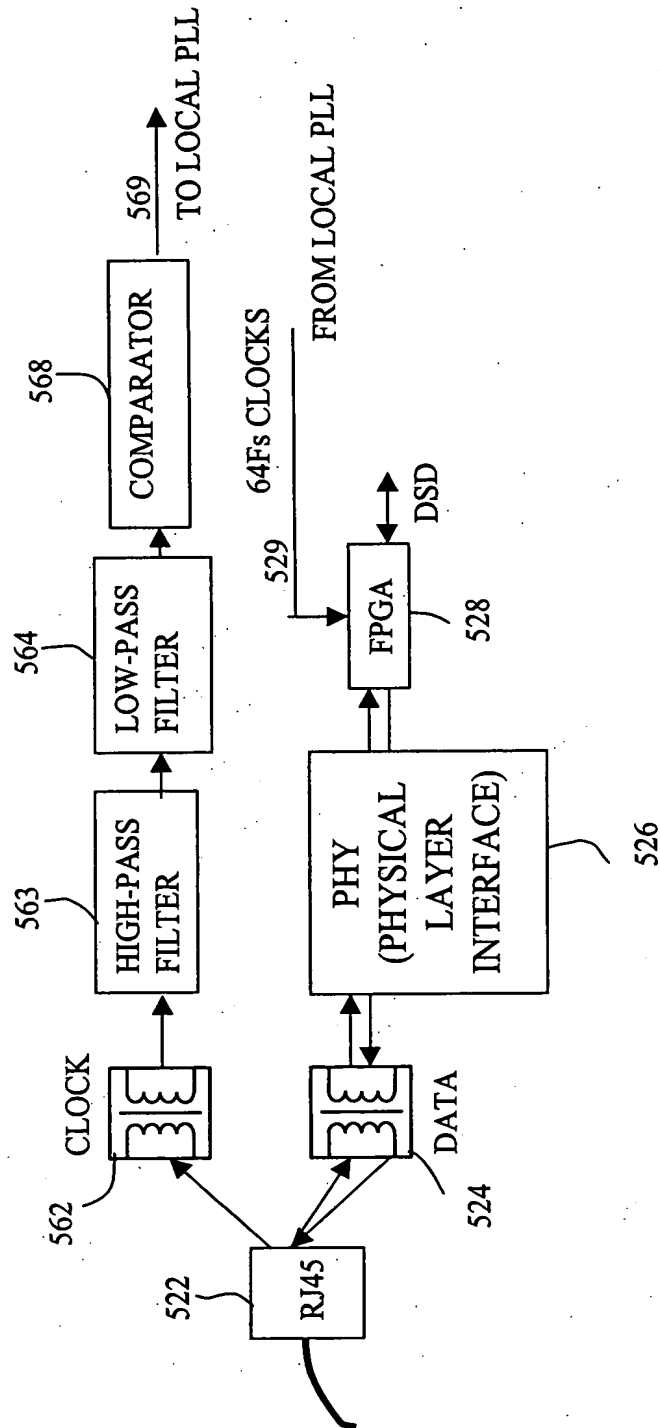


FIGURE 7

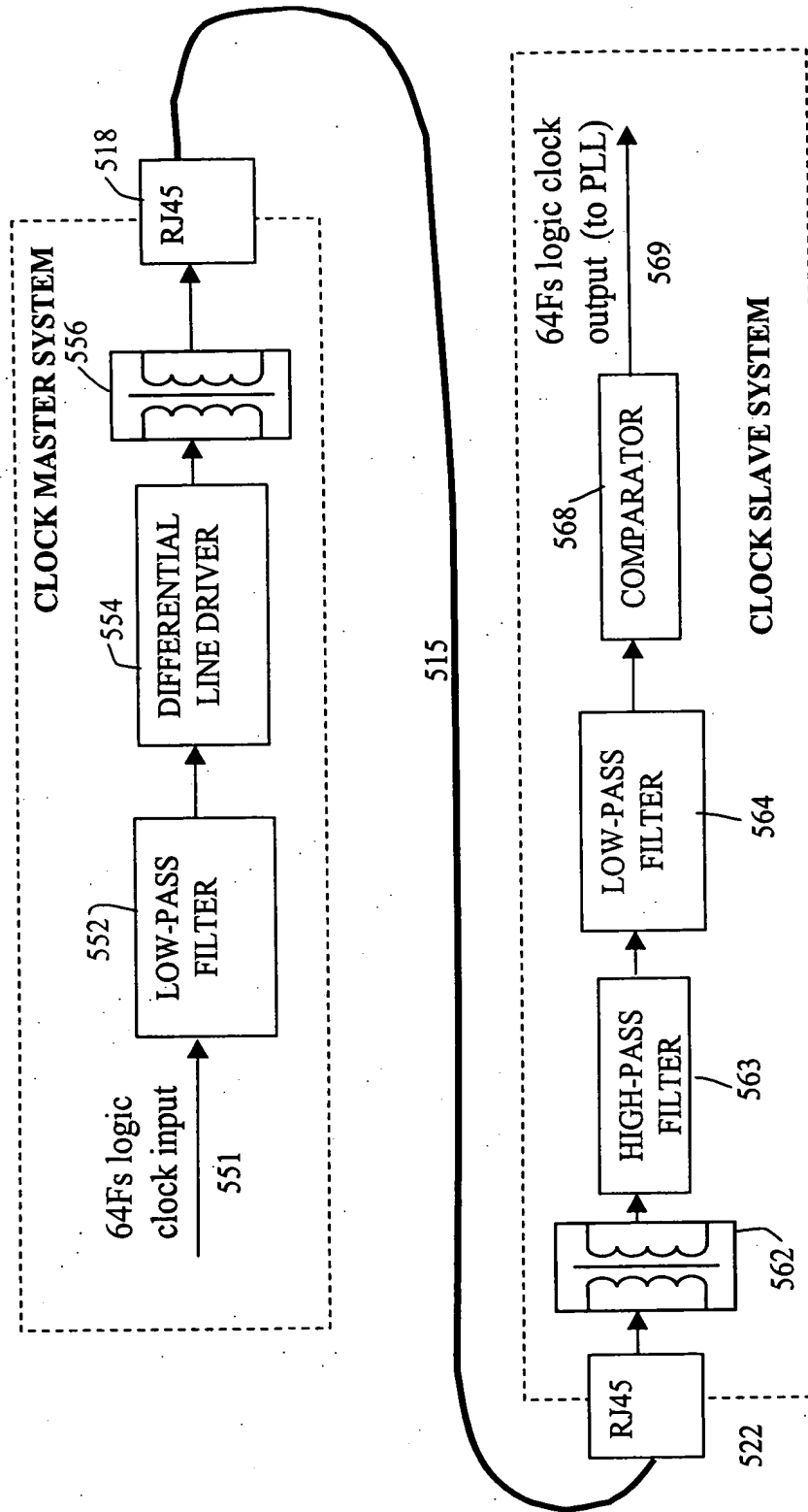


FIGURE 8

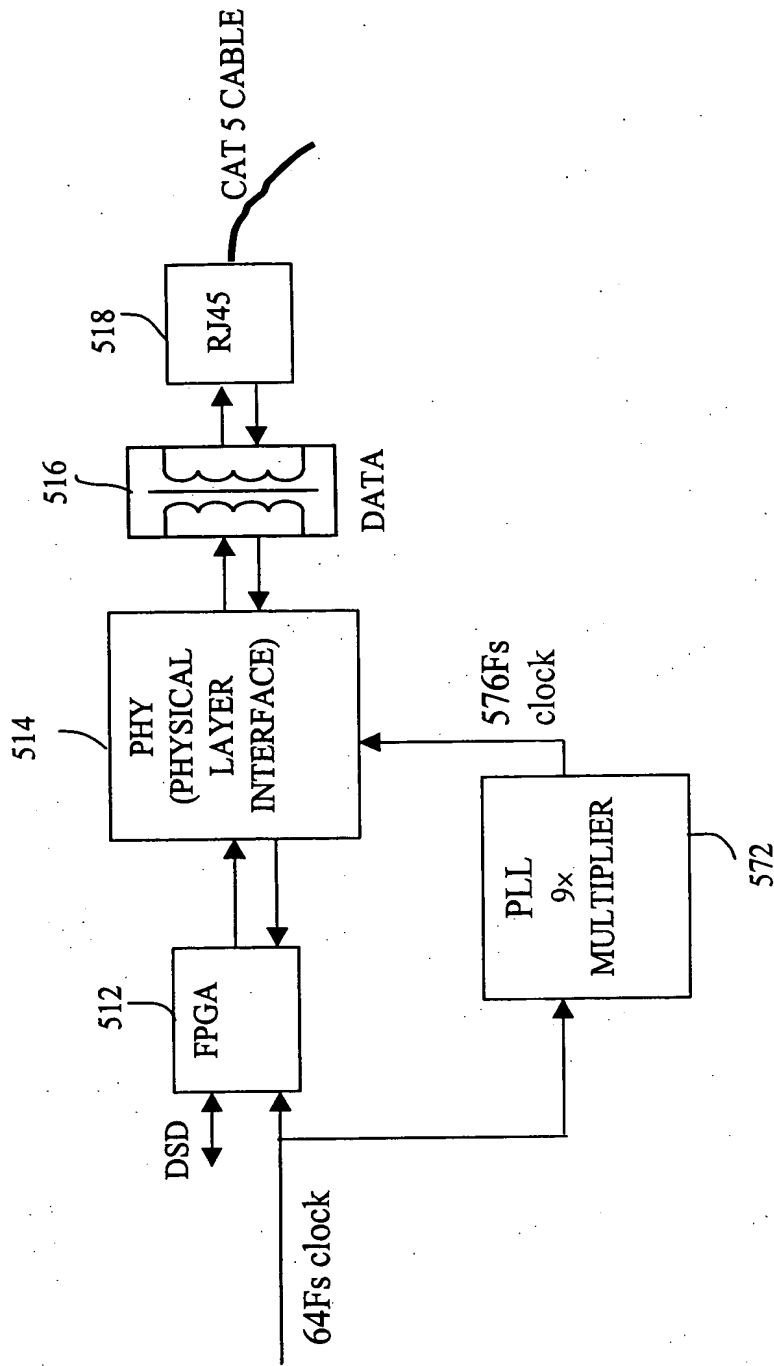


FIGURE 9

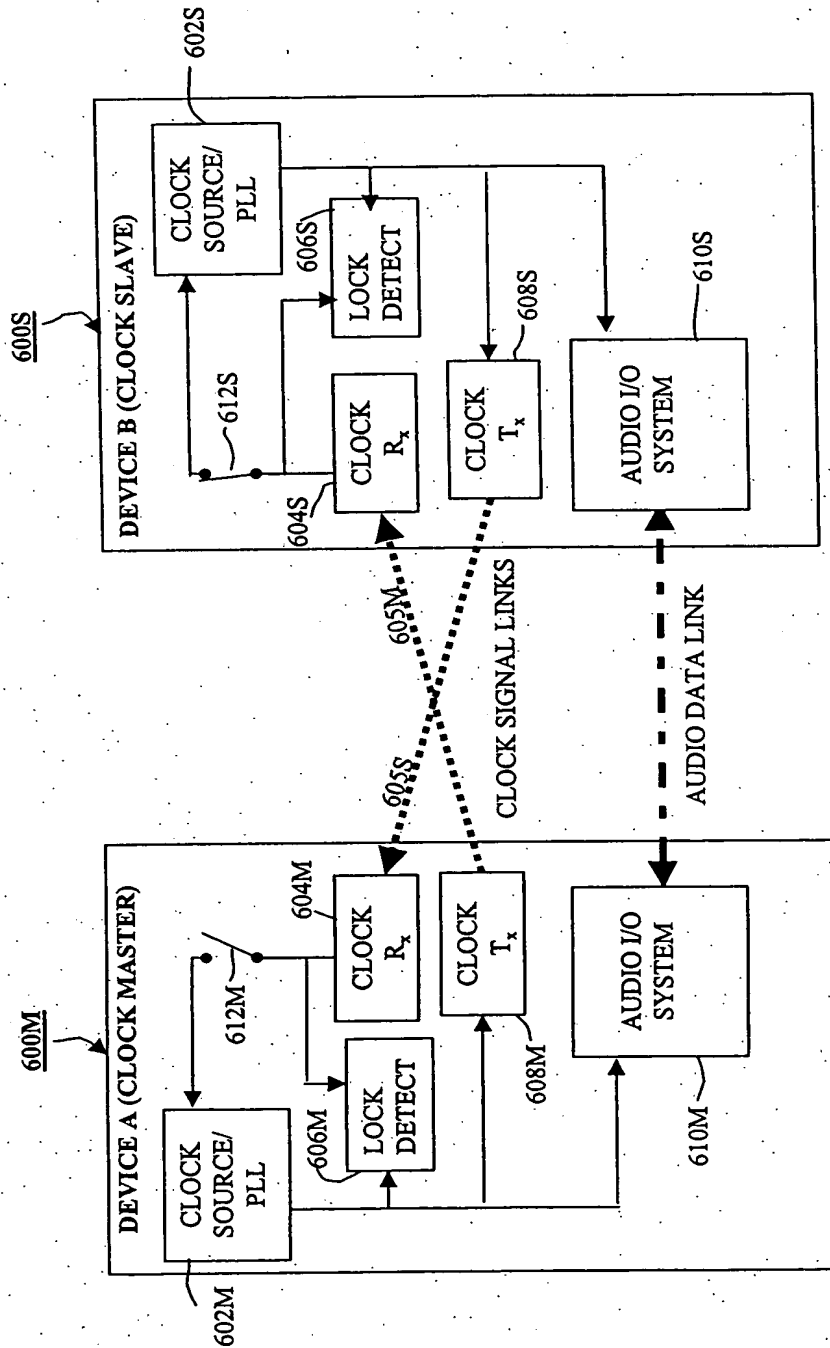


FIGURE 10

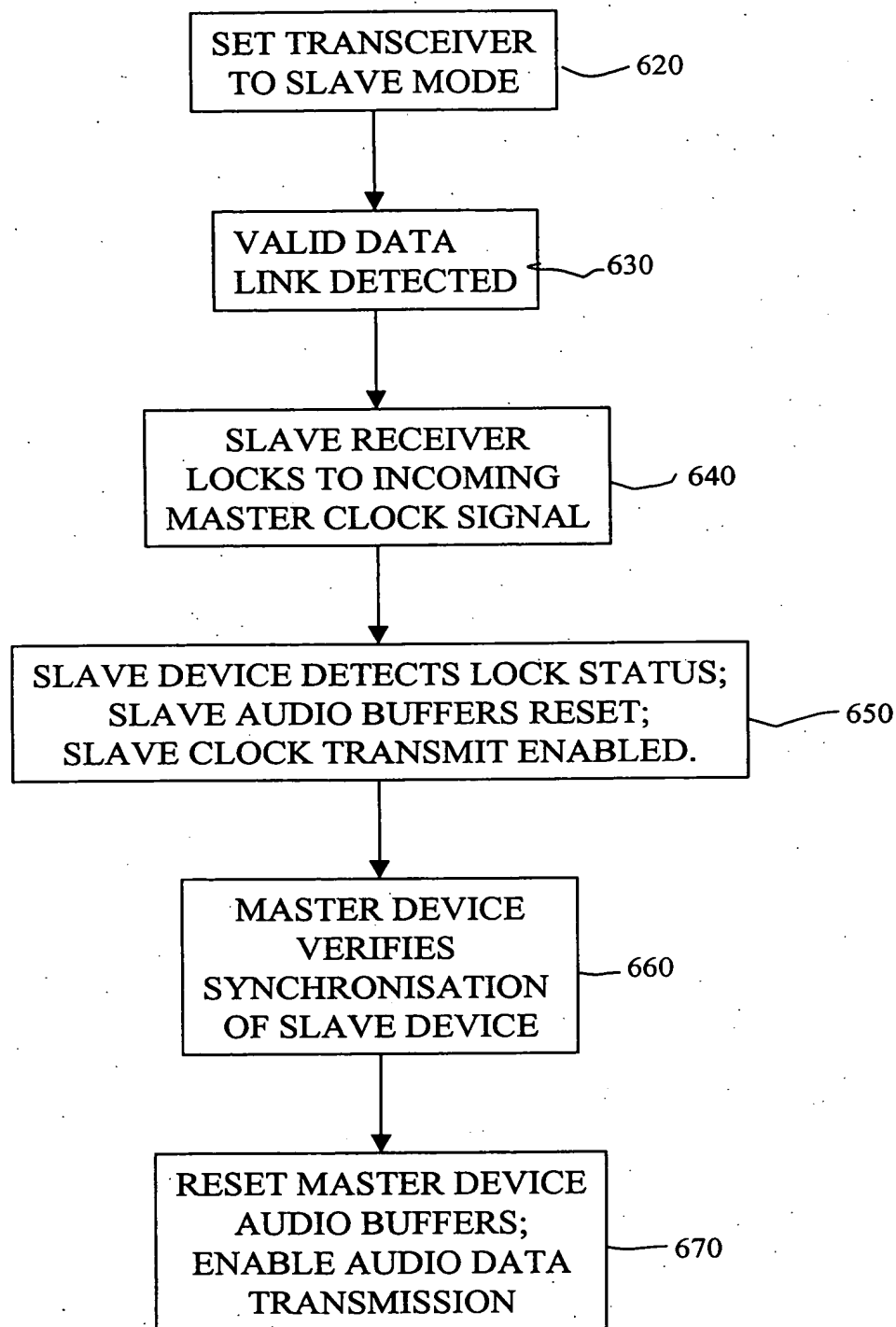


FIGURE 11

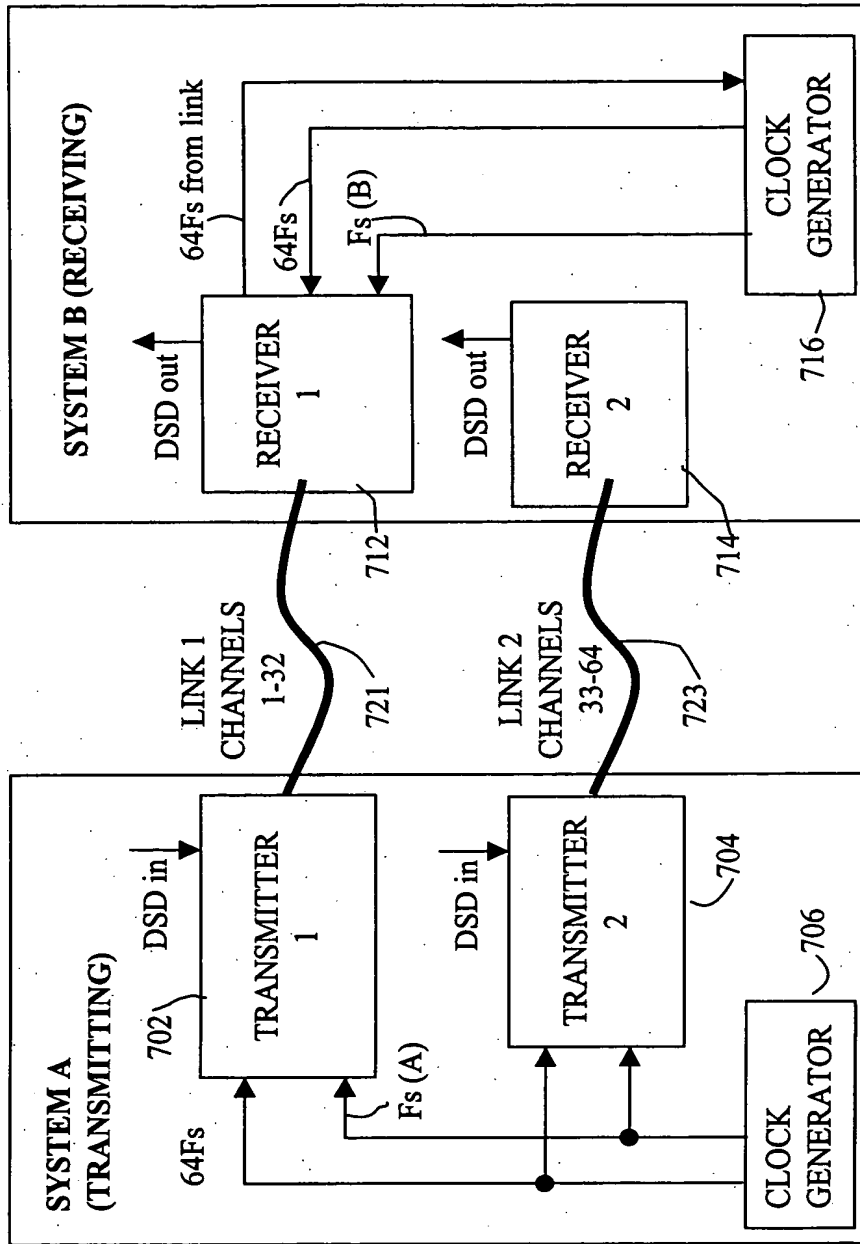
700B

FIGURE 12

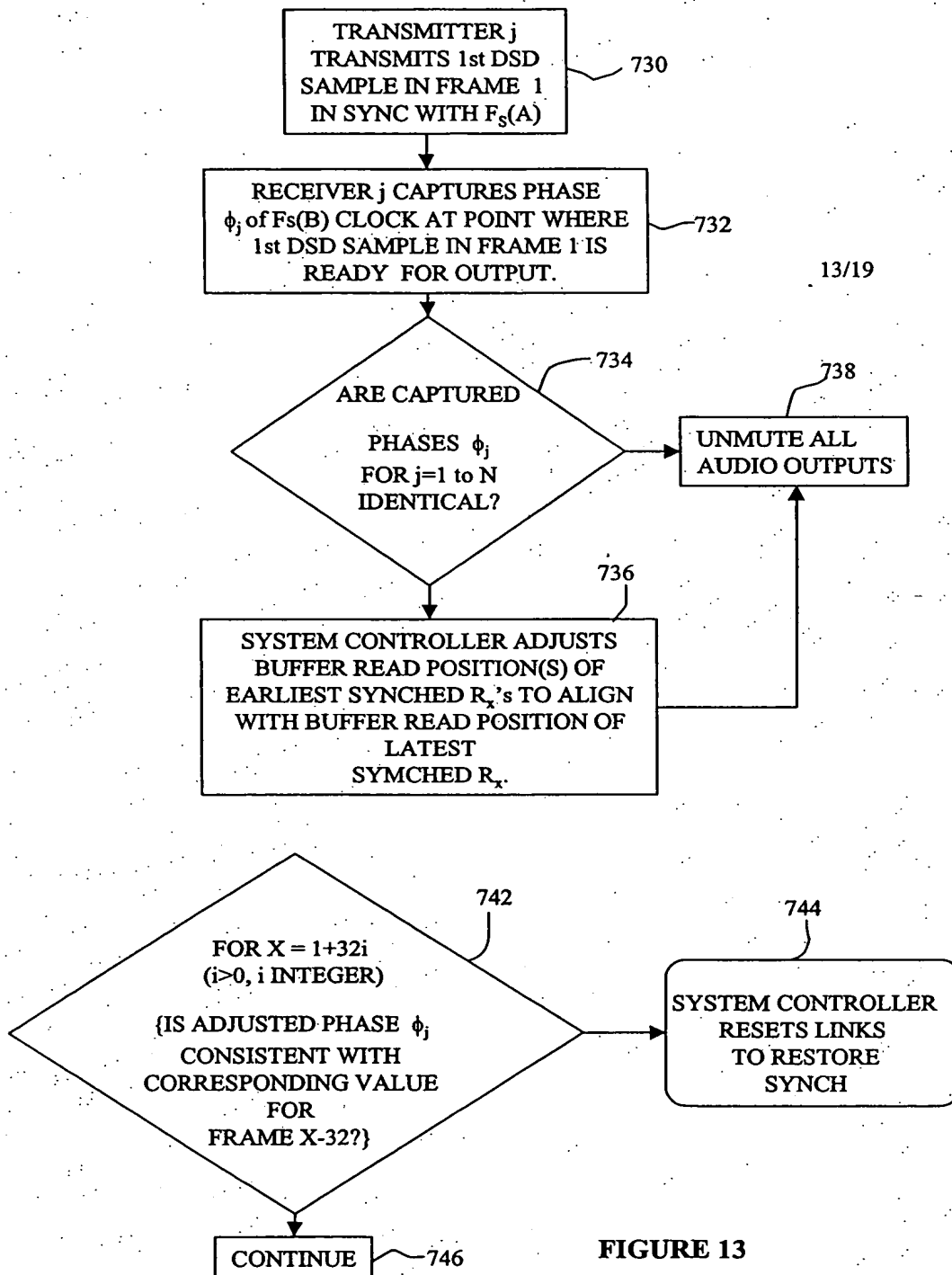


FIGURE 13

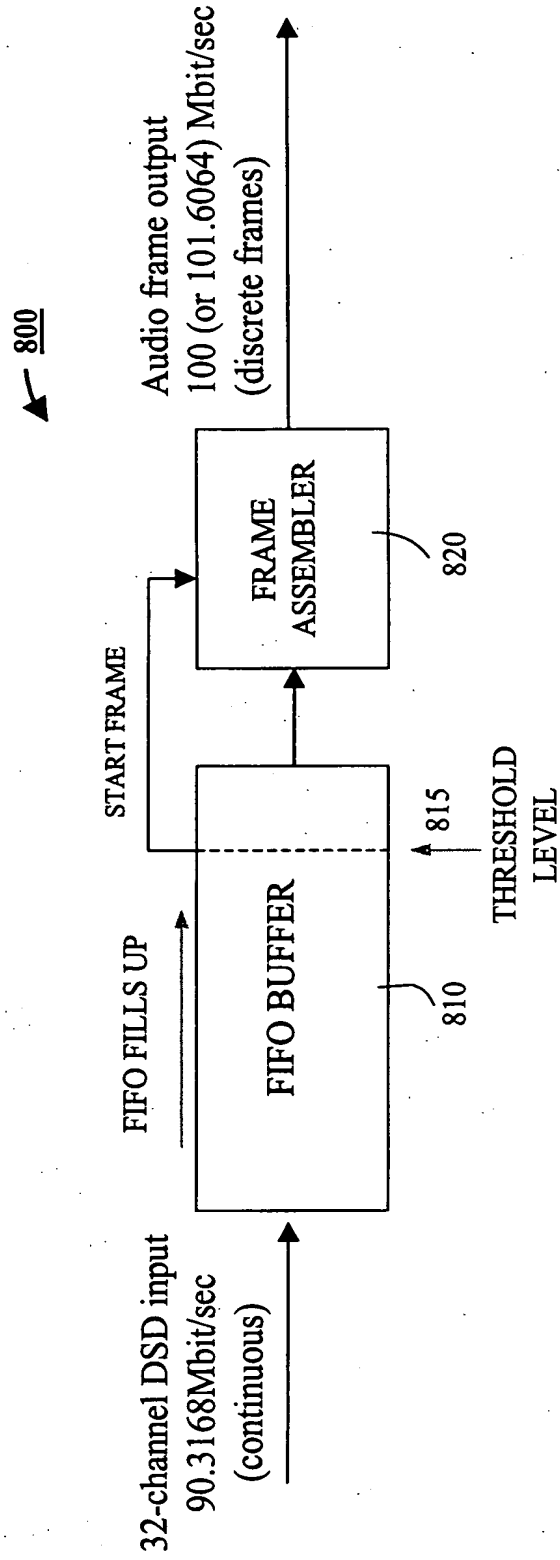


FIGURE 14

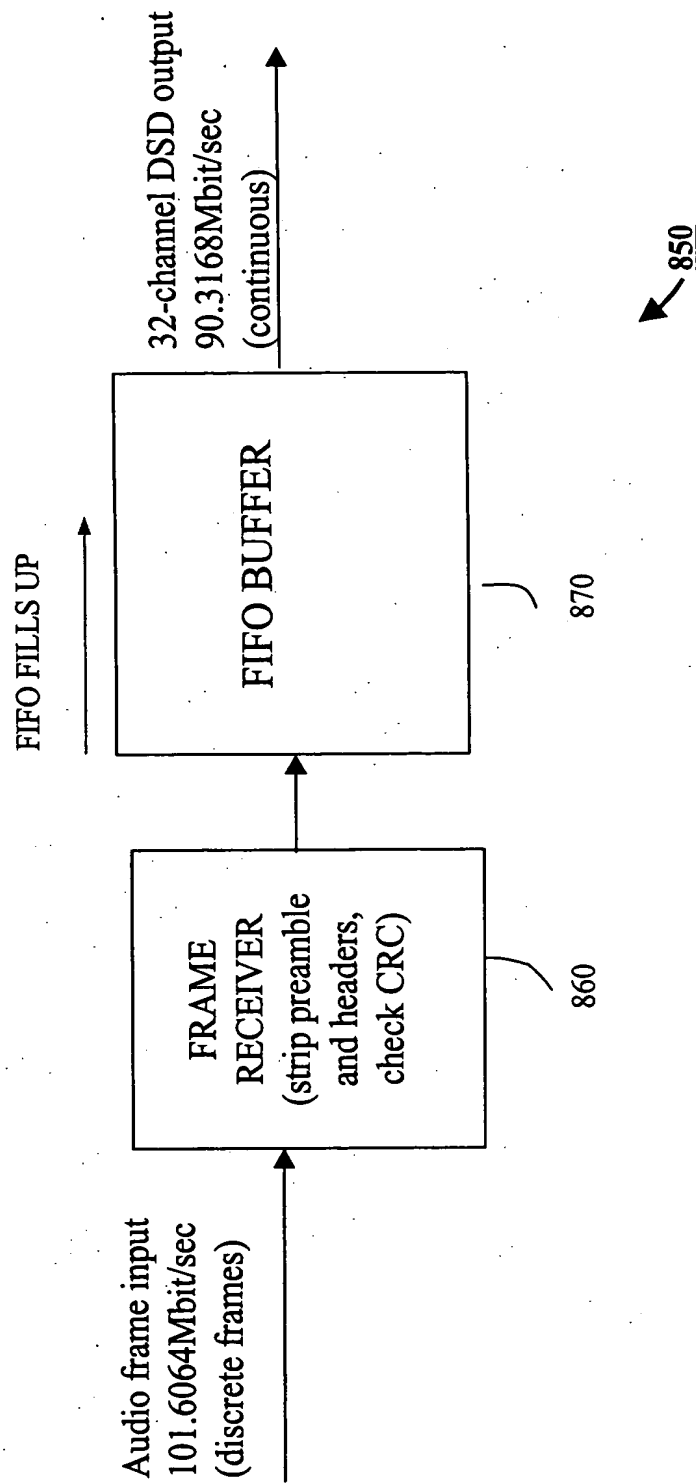
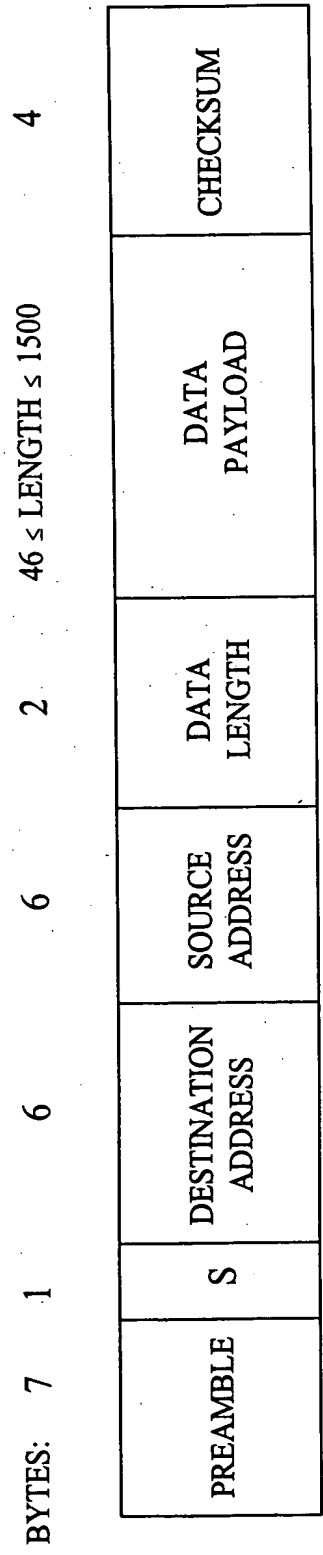


FIGURE 15



STANDARD ETHERNET FRAME

FIGURE 16

PRE-AMBLE	8 Bytes	DEST. MAC ADDRESS	6 Bytes	SOURCE MAC ADDRESS	6 Bytes	DATA LENGTH	2 Bytes	NETWORKING HEADERS	28 Bytes	RESERVED FIELD	12 Bitss	FRAME TYPE	4 Bits	AUDIO DATA PAYLOAD	1480 Bytes	CRC	4 Bytes
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AUDIO DATA FRAME

FIGURE 17

AUDIO DATA FRAME

Word	B31-B28B27-B24 B23-B20 B19-B16 B15-B12 B11-B8 B7-B4 B3-B0							
0	5h	5h	5h	5h	5h	5h	5h	5h
1	Dh	5h	5h	5h	5h	5h	5h	5h
2	Reserved for destination MAC address							
3	Reserved for source MAC address			Reserved for dest. MAC address				
4	Reserved for source MAC address							
5	Length - always 1510 bytes (0x5E6)							
6	Reserved for networking headers							
7								
8								
9								
10	Reserved for networking headers							
11								
12								
13-382								
370 samples 32-channel DSD audio								
CRC								
383								

FIGURE 18A

Word	B31-B28	B27-B24	B23-B20	B19-B16	B15-B12	B11-B8	B7-B4	B3-B0
0	5h	5h	5h	5h	5h	5h	5h	5h
1	Dh	5h	5h	5h	5h	5h	5h	5h
2	Reserved for destination MAC address							
3	Reserved for source MAC address				Reserved for destination MAC address			
4	Reserved for source MAC address							
5	IP Type of Service	IP Hdr. Len	IP Version	Length – 1446 bytes (0x05A6)				
6	IP Protocol	IP Datagram ID	IP TTL	IP Datagram Length				
7	IP Header Checksum		IP Fragment Offset		IP Flags			
8	Source IP Address (low 16)		IP Header Checksum		Source IP Address (high 16)			
9	Destination IP Address (low 16)		Destination IP Address (high 16)		Destination IP Address (high 16)			
10	IP Options (low 16)		IP Header Padding		IP Options (high 8)			
11	UDP Source Port		UDP Destination Port		UDP Checksum			
12	UDP Length		UDP Checksum		UDP Checksum			
13	Frame format ID (0)		Frame format ID (1)		Frame format ID (1)			
14	Frame format ID (2)		Frame format ID (1)		Frame format ID (1)			
15-366	1408-byte frame payload (352 DSD samples, 24 channels, plus 88 bytes aux data)							
367	CRC							

Fig 18B

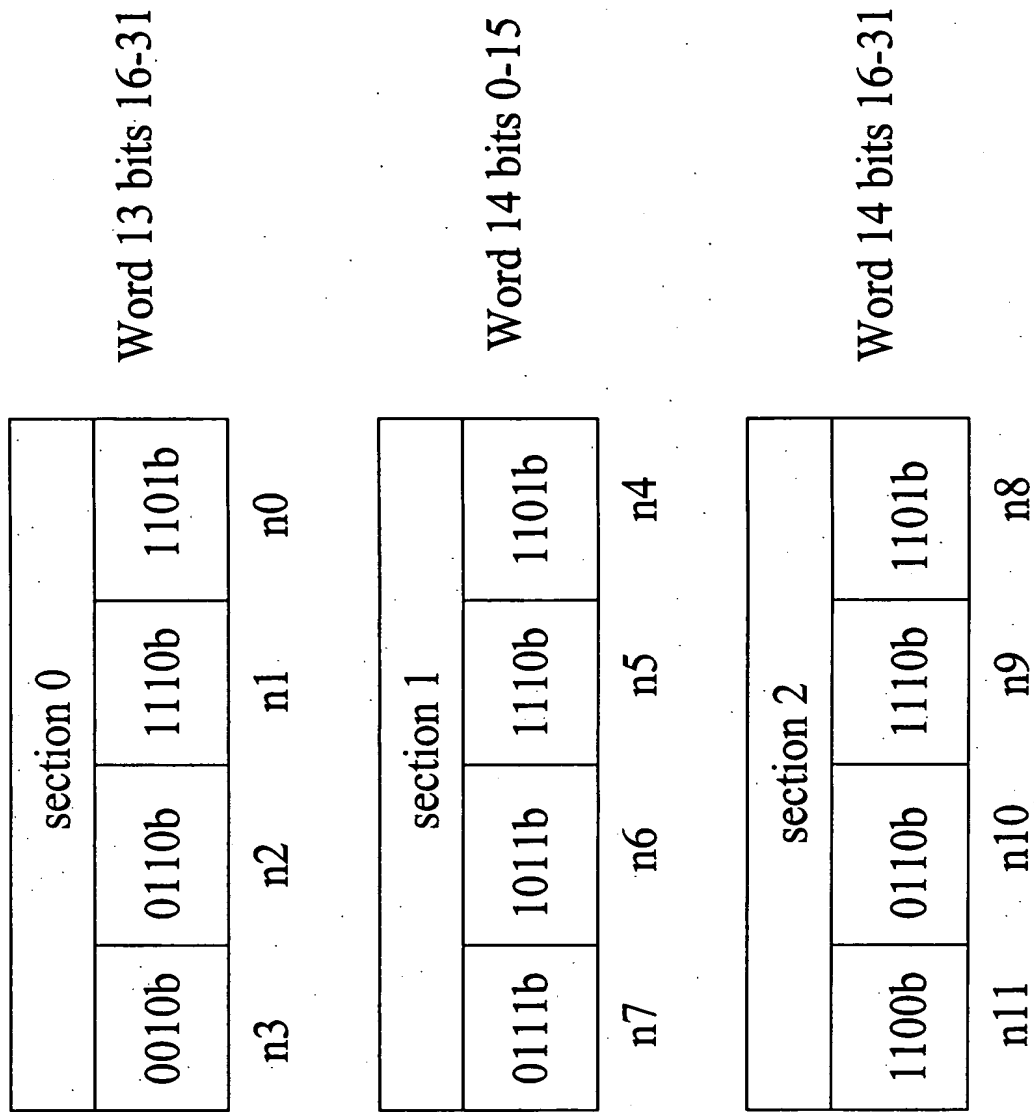
CONTROL DATA FRAME

Word	B31-B28 B27-B24 B23-B20 B19-B16 B15-B12 B11-B8 B7-B4 B3-B0									
0	5h	5h	5h	5h	5h	5h	5h	5h	5h	5h
1	Dh	5h	5h	5h	5h	5h	5h	5h	5h	5h
2	Reserved for destination MAC address									
3	Reserved for source MAC address			Reserved for dest. MAC address						
4	Reserved for source MAC address									
5						Length				
6	Reserved for networking headers									
7										
8										
9										
10										
11										
12	reserved	reserved	reserved	reserved	reserved	reserved	reserved	reserved	reserved	reserved
13-24	48 bytes control data (of arbitrary format)									
25	CRC									

FIGURE 19

Bits 15:12	Bits 11:8	Bits 7:4	Bits 3:0
Flags	Frame Type	Protocol Major Ver.	Protocol Minor Ver.

Fig. 20

**Fig. 21**

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
P5	P4	P3	A1	P2	A0	24	23	P1	22	21	20	19	18	17	16	P0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Fig. 22

Parity bit	Data block elements XNOR'd to generate parity bit														
P0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P1	1	2	3	4	5	6	7	8	16	17	18	19	20	21	22
P2	1	2	3	4	9	10	11	12	16	17	18	19	23	24	A0
P3	1	2	5	6	9	10	13	14	16	17	20	21	23	24	A1
P4	1	3	5	7	9	11	13	15	16	18	20	22	23	A0	A1
P5	(all elements – global parity bit)														

FIGURE 23A

Syndrome bit	Data block elements XOR'd to generate syndrome bit														
s_0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
s_1	1	2	3	4	5	6	7	8	16	17	18	19	20	21	22
s_2	1	2	3	4	9	10	11	12	16	17	18	19	23	24	A0
s_3	1	2	5	6	9	10	13	14	16	17	20	21	23	24	A1
s_4	1	3	5	7	9	11	13	15	16	18	20	22	23	A0	A1
s_5	(all elements including parity bits)														

FIGURE 23B

Nibble	Bit 3	Bit 2	Bit 1	Bit 0
0	B3[0]	B2[0]	B1[0]	B0[0]
1	B7[0]	B6[0]	B5[0]	B4[0]
2	B11[0]	B10[0]	B9[0]	B8[0]
...
7	B31[0]	B30[0]	B29[0]	B28[0]
8	B31[1]	B2[1]	B1[1]	B0[1]
9	B7[1]	B6[1]	B5[1]	B4[1]
...
254	B27[31]	B26[31]	B25[31]	B24[31]
255	B31[31]	B30[31]	B29[31]	B28[31]
256	B35[0]	B34[0]	B33[0]	B32[0]
257	B39[0]	B38[0]	B37[0]	B36[0]
...
2814	B347[31]	B346[31]	B345[31]	B344[31]
2815	B351[31]	B350[31]	B349[31]	B348[31]

Fig 24

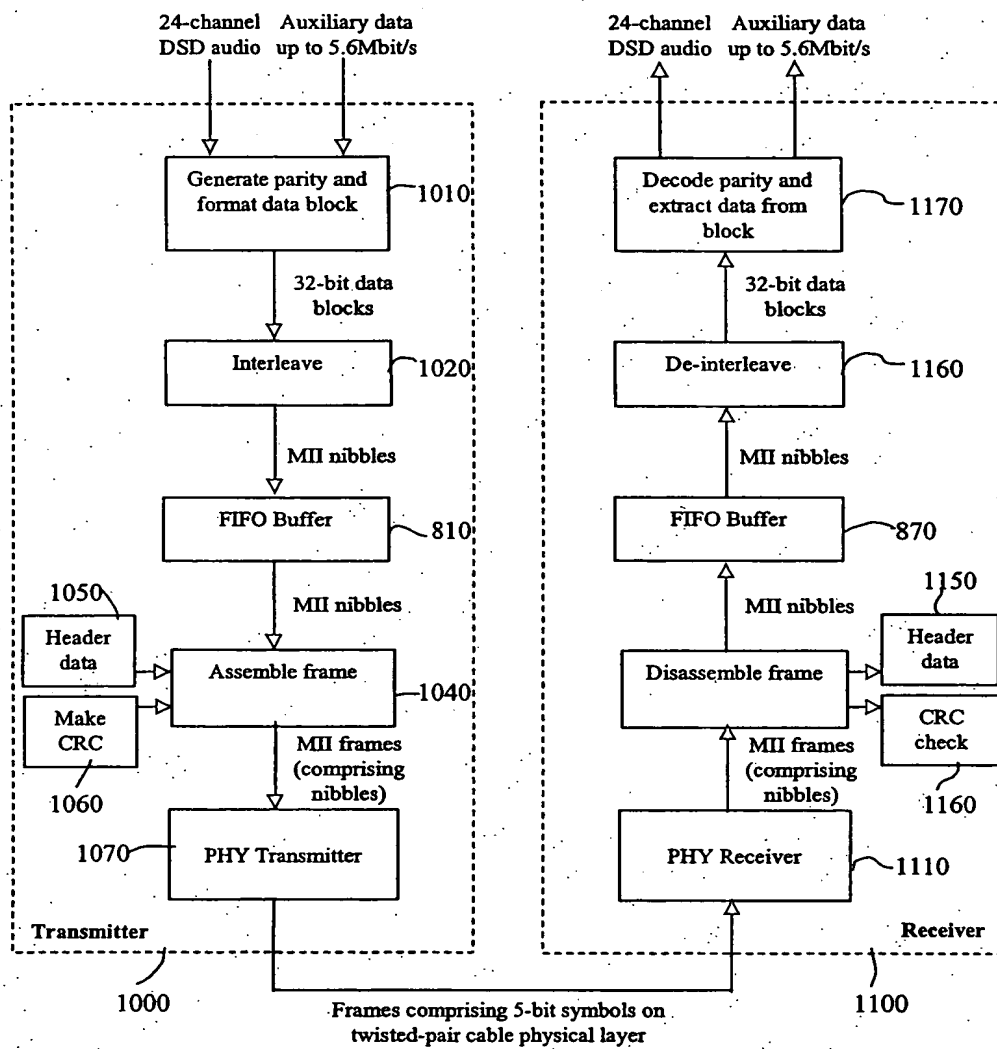


Fig. 25

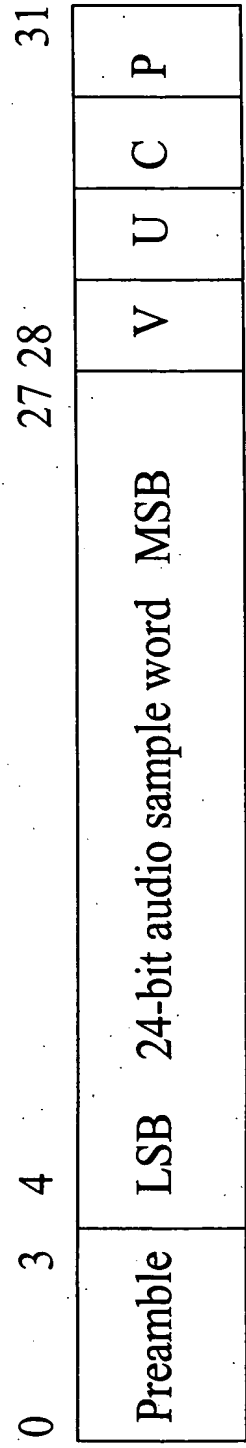


Fig 26A

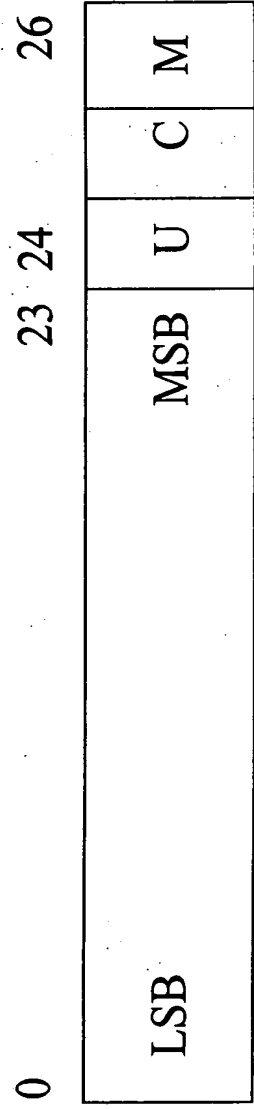


Fig 26B

TIME
→

Z
0000001000000
↑ First received bit
Most recently received bit

Fig. 27A

S
0000000011...

Fig. 27B

SV
0000000011100000

Fig. 27C

SV
0000000011000000

Fig. 27D

Type value	Frame format
0x0	64fs DSD (as Protocol Spec v1.1)
0x1	Reserved
0x2	Reserved
0x3	Reserved
0x4	PCM, 4 sample sub-frames
0x5	PCM, 5 sample sub-frames
0x6	PCM, 6 sample sub-frames
0x7	PCM, 7 sample sub-frames
0x8	PCM, 8 sample sub-frames
0x9	PCM, 9 sample sub-frames
0xA	PCM, 10 sample sub-frames
0xB	PCM, 11 sample sub-frames
0xC	PCM, 12 sample sub-frames
0xD	PCM, 13 sample sub-frames
0xE	Reserved
0xF	Reserved

Fig 29

Flag bit	Name	Description
0	44.1kHz sync flag	1: First DSD sample in frame was received at transmitter simultaneously with 44.1kHz sync clock positive edge 0: First DSD sample in frame was not received at transmitter simultaneously with 44.1kHz sync clock positive edge
1	fs/n sync flag	1: First DSD sample in frame was received at transmitter simultaneously with fs/n sync clock positive edge 0: First DSD sample in frame was not received at transmitter simultaneously with fs/n sync clock positive edge
others	(not used)	Set to 0 by transmitter, ignored by receiver

Fig 30

(Type field = 0x4 through 0xD, PCM)

Flag bits	Name	Description
1:0	Clock base flag	00: 44.1kHz (+/-100ppm) audio base clock 01: 48kHz (+/-100ppm) audio base clock 10: Varispeed (38.5875kHz to 54kHz) audio base clock 11: (reserved)
3:2	Base clock sample rate multiplier	00: 1x base clock (f_s) 01: 2x base clock ($2f_s$) 10: 4x base clock ($4f_s$) 11: 8x base clock ($8f_s$)

Fig 31

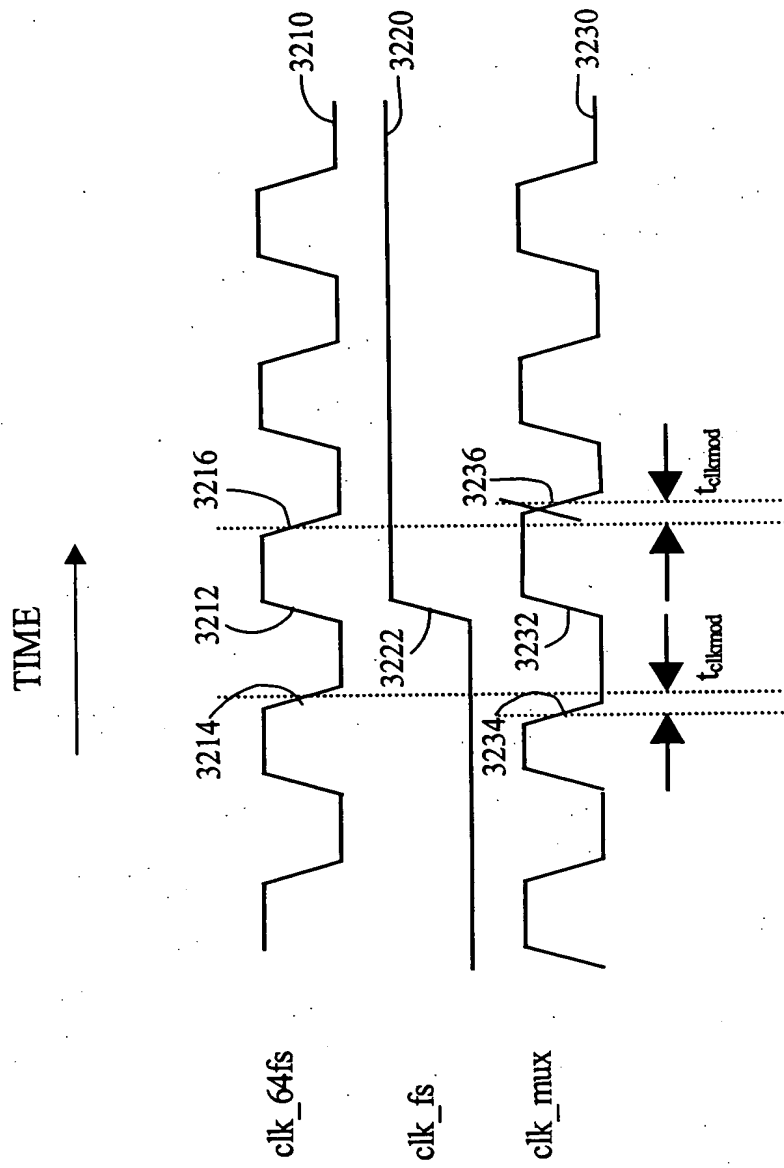


Fig 32

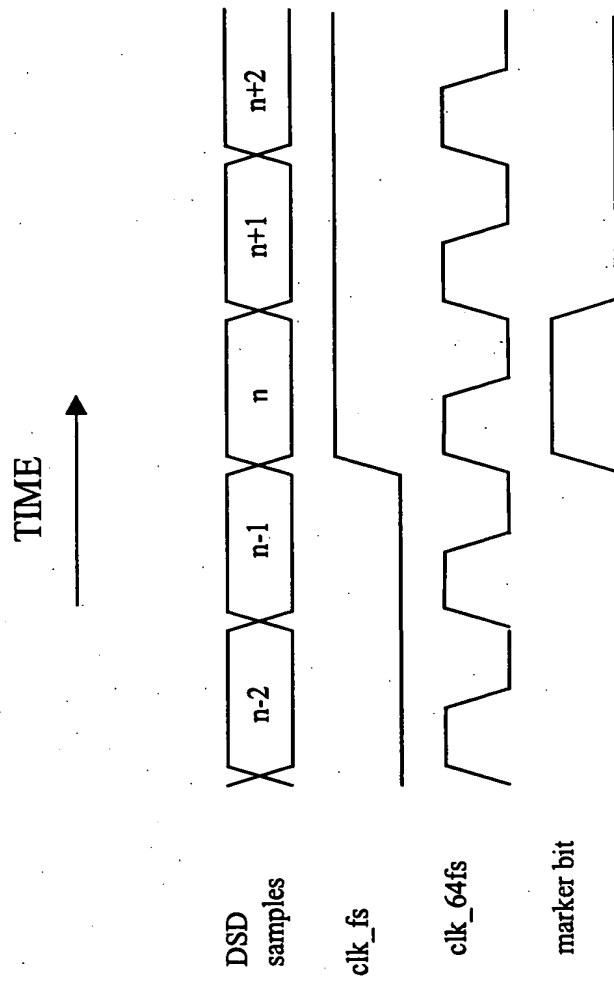


Fig 33

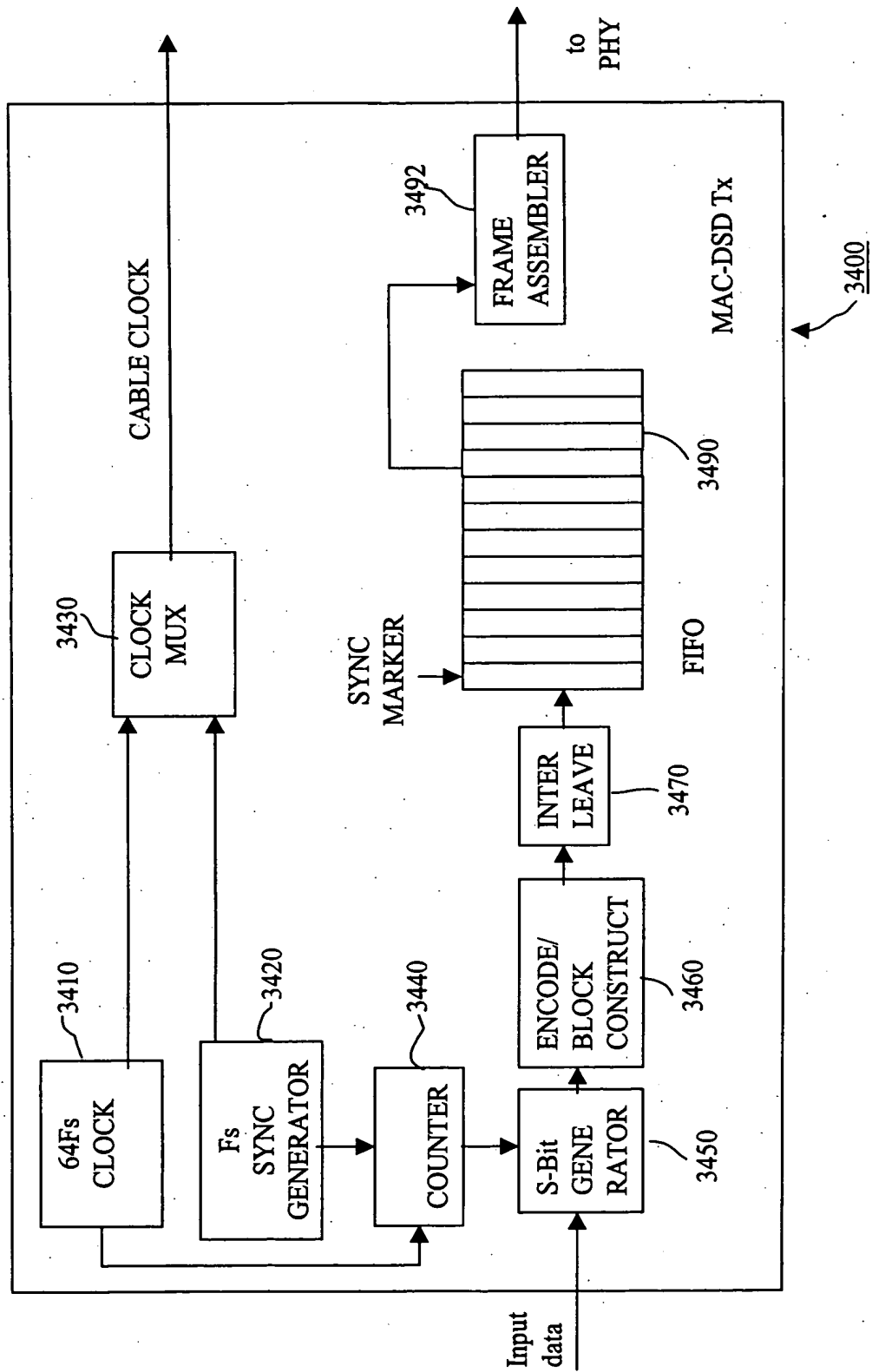


Fig 34

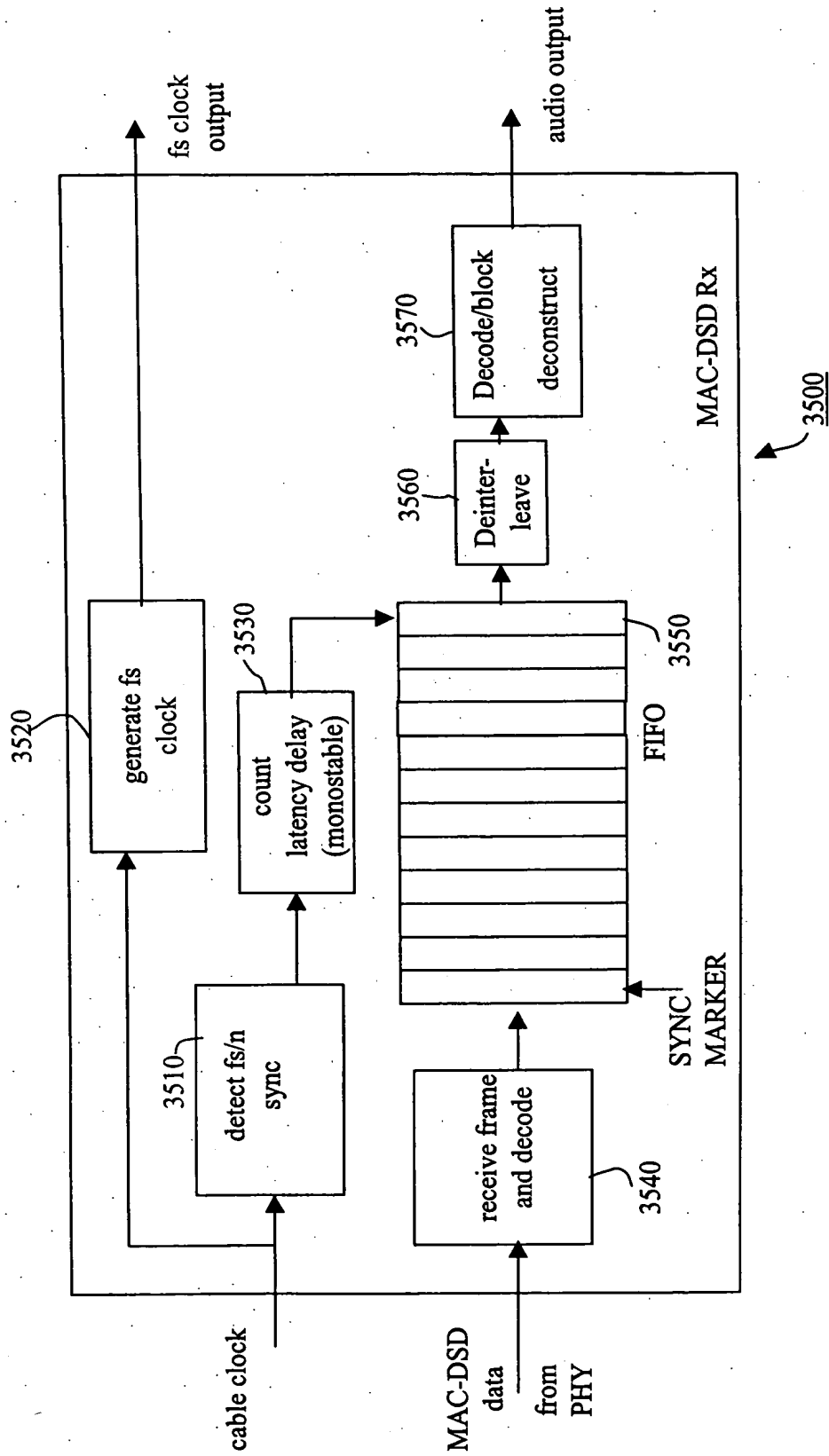


Fig 35

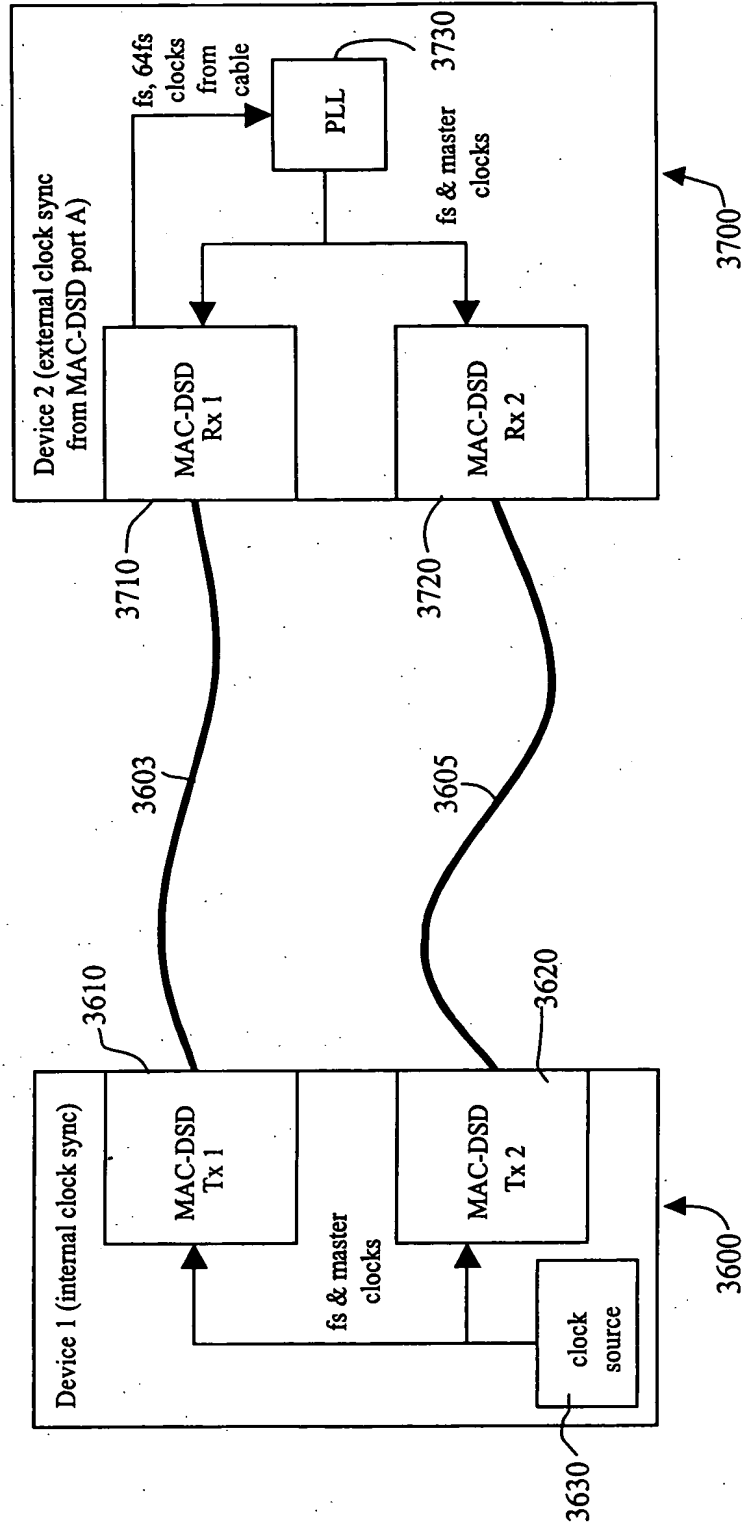


Fig 36

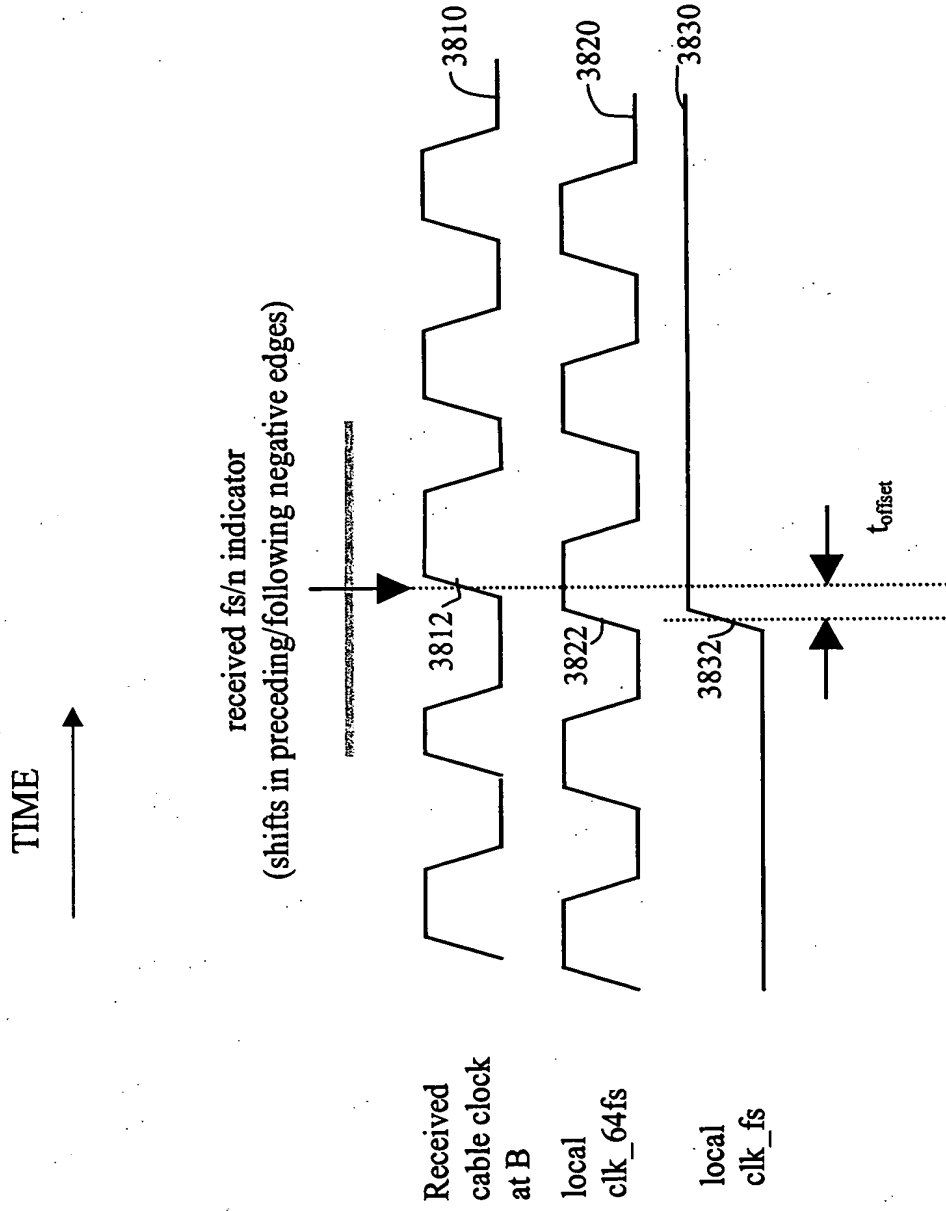


Fig 37

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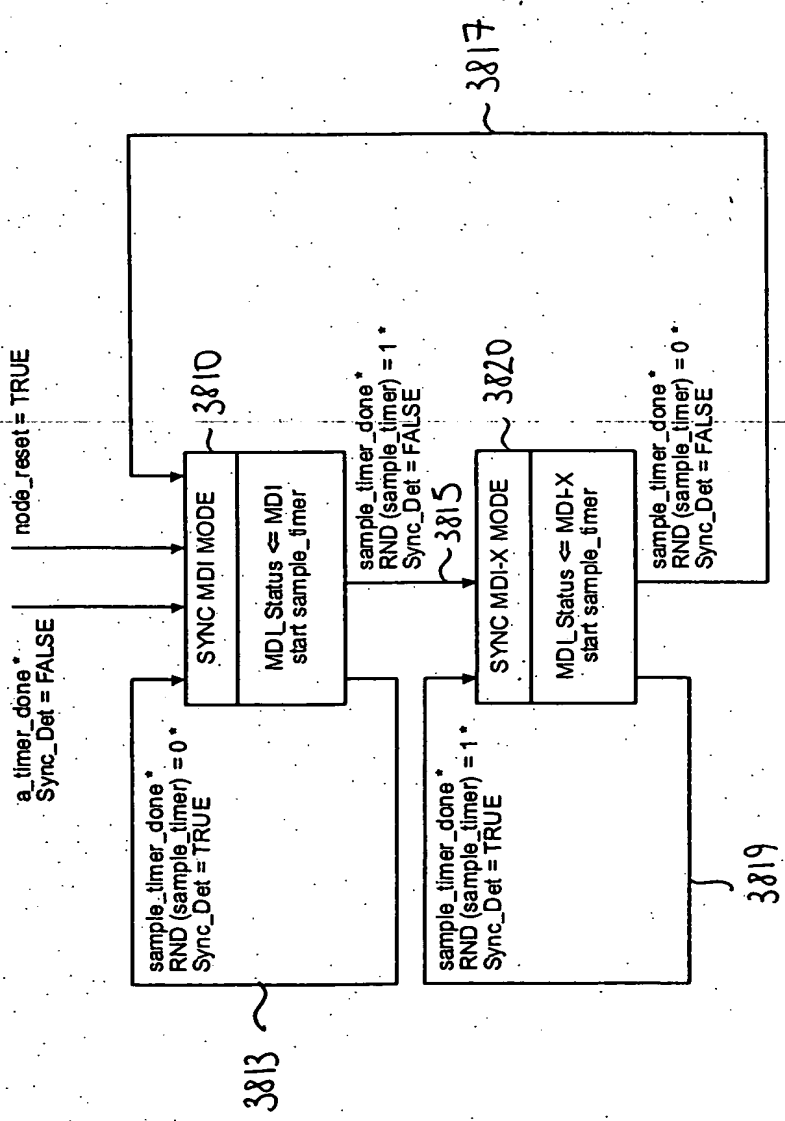


Fig 38

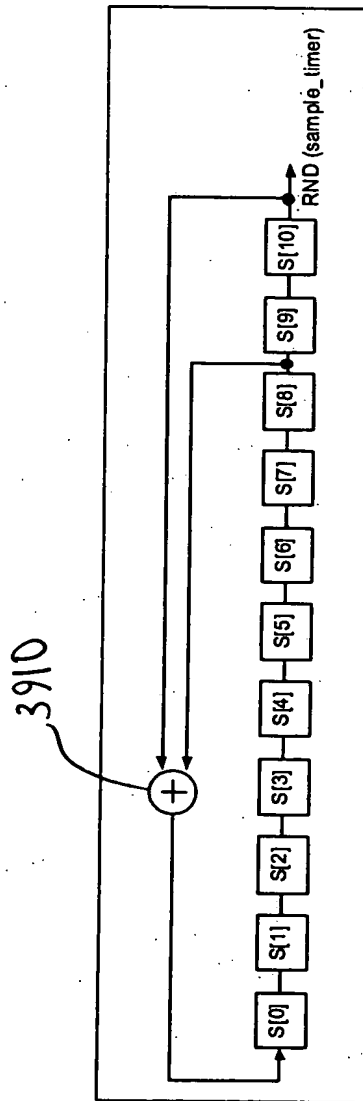
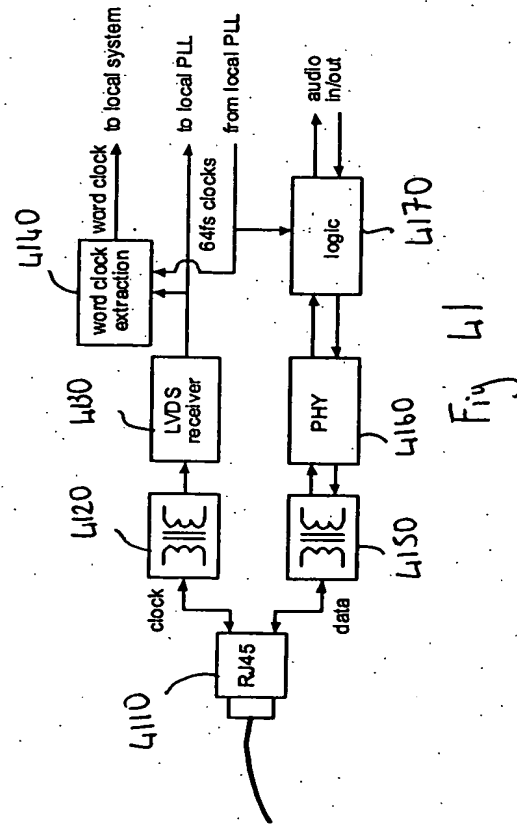
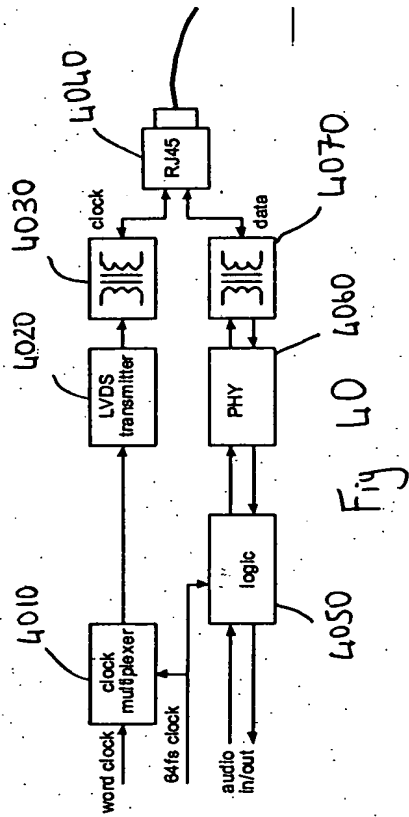
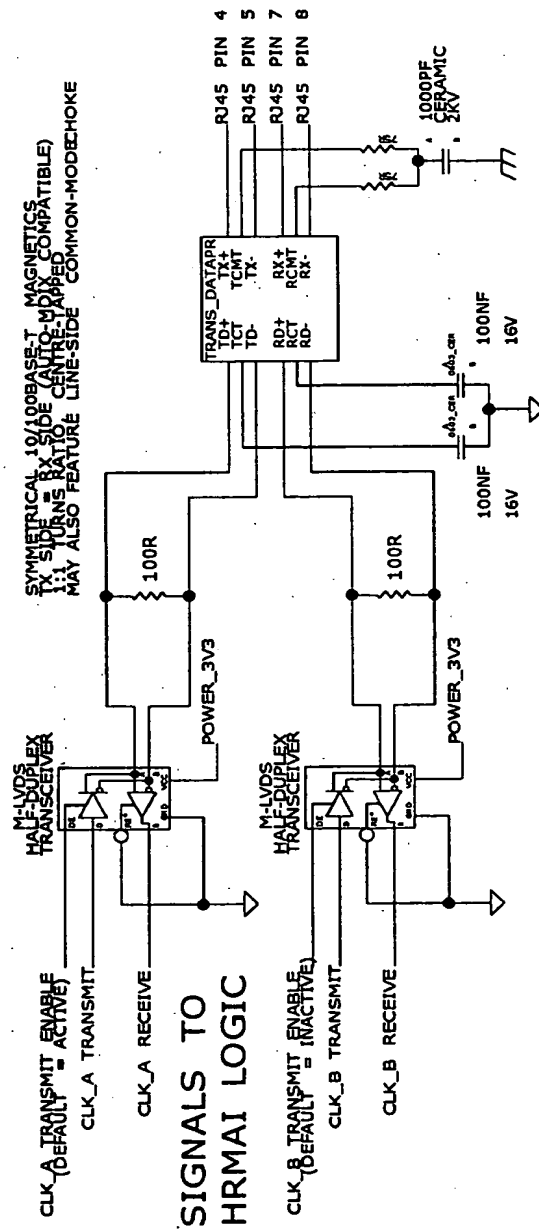


Fig 39





Octet	Content
0-7	Preamble and start frame delimiter ($55_{16} 55_{16} 55_{16} 55_{16} 55_{16} 55_{16} 55_{16} 55_{16} D_{16}$)
8-13	MAC destination address (default = $80_{16} 00_{16} 00_{16} 00_{16} 00_{16} 00_{16}$)
14-19	MAC source address (default = $00_{16} 00_{16} 00_{16} 00_{16} 00_{16} 00_{16}$)
20-21	Length/Type field ($05_{16} 8E_{16}$)
22-24	LLC header ($AA_{16} AA_{16} 03_{16}$)
25-29	SNAP header (value to be determined)
30-35	Frame format identification header
36-1443	Payload
1444-1447	32-bit frame CRC (ISO/IEC 8802.3)

Fig 43

	Bits 0:3	Bits 4:7
Octet 30	Protocol minor version	Protocol major version
Octet 31	Frame Type	Flags
Octet 32	Audio Format	
Octet 33	(reserved)	
Octet 34	(reserved)	
Octet 35	CRC-8 checksum	

Fig 44A

Value	Frame type
0 ₁₆	Frame contains bitstream-mode audio
1 ₁₆	Frame contains AES3-compatible mode audio
(other)	(reserved – frame shall be disregarded by receiver)

Fig 44B

Bit	Flag indication
0	0: (no flag)
	1: first sample in frame is associated with an Audio sample synchronisation marker (see section 9.3)
3:1	(reserved: transmitted as zero, disregarded by receiver)

Fig 44C

Bit	Flag indication
0	0: (no flag)
	1: first sample in frame is associated with an Audio sample synchronisation marker (see section 9.3)
3:1	(reserved: transmitted as zero, disregarded by receiver)

Fig 44D

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Value	Flag indication
61 ₁₆	Frame contains bit-stream audio: 1-bit samples, 64f _s sample rate
71 ₁₆	Frame contains bit-stream audio: 1-bit samples, 128f _s sample rate
(other)	(reserved – frame shall be disregarded by receiver)

Fig 44 E

Bits	Flag indication
3:0	Sample word length: (unsigned 4-bit integer, n) sample word length = 4n
5:4	Sample frequency multiplier: 00 ₂ : 1x base frequency 01 ₂ : 2x base frequency 10 ₂ : 4x base frequency 11 ₂ : 8x base frequency
6	Base sample frequency: 0: 44,1 kHz 1: 48 kHz
7	Variable sample frequency indicator: 0: Maximum sample frequency deviation = 100 ppm 1: Maximum sample frequency deviation = 12,5 %

Fig 44 F

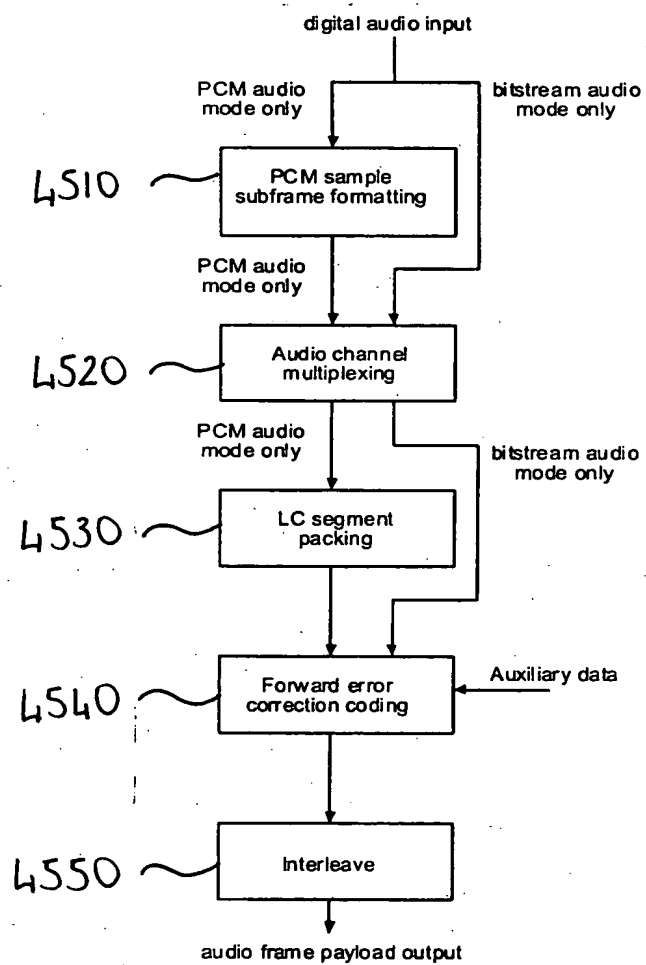


Fig 45

B

000000001100000000

Fig 46A

B

000000001000000000

Fig 46B

L9/55

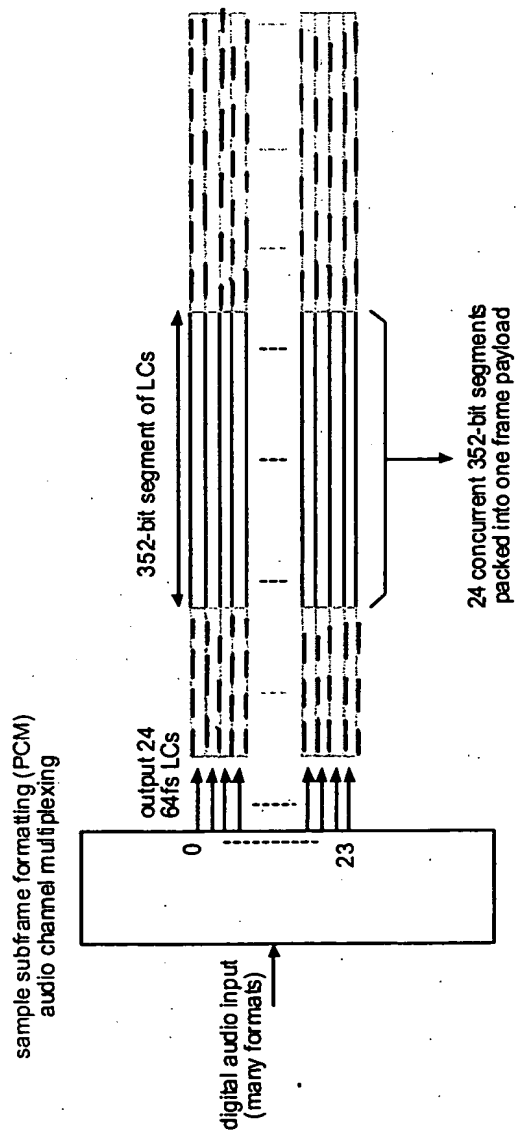


Fig 47

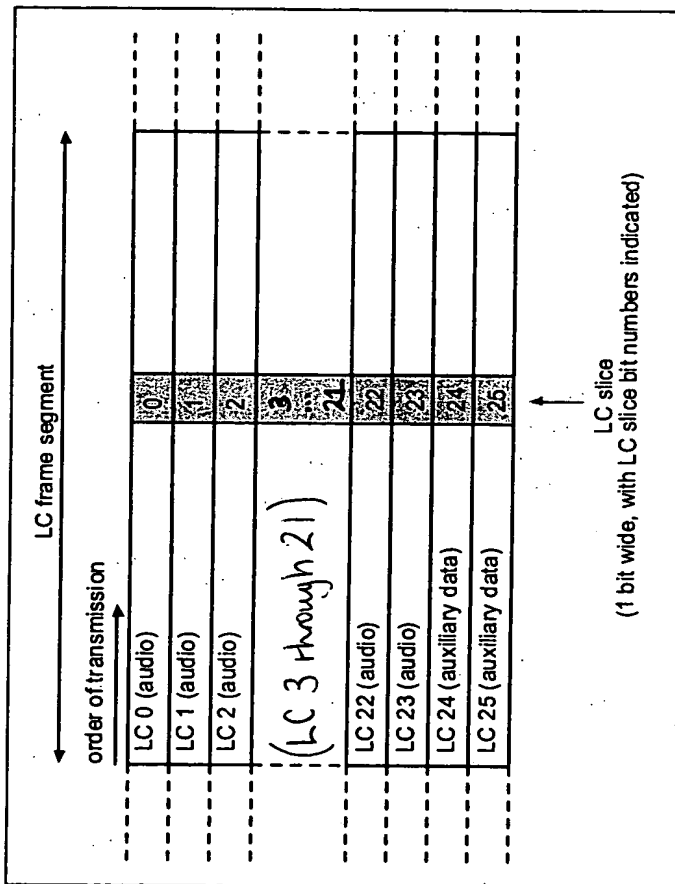


Fig 48

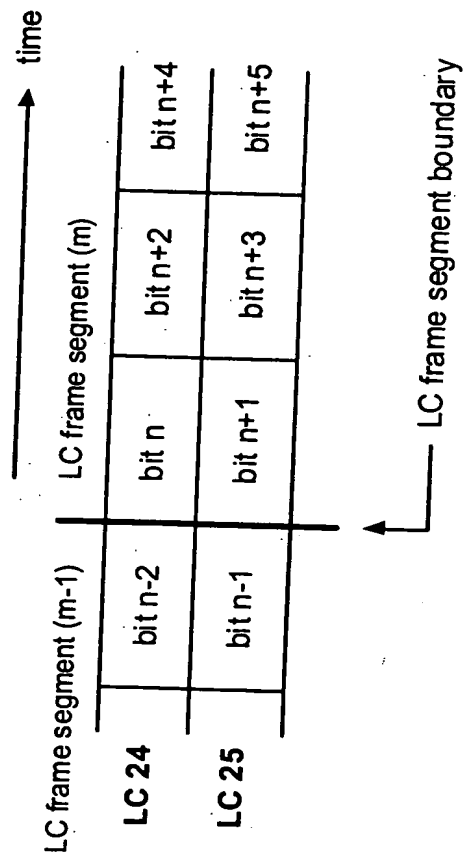
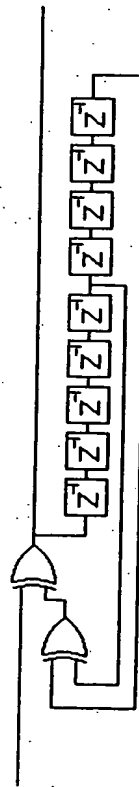
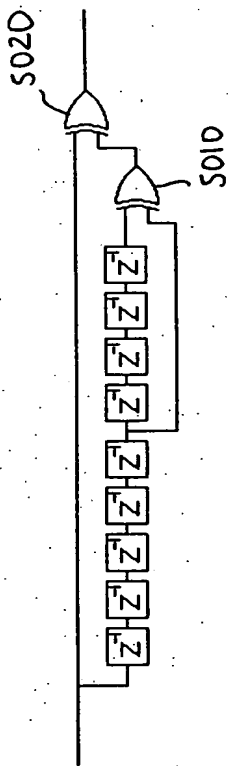


Fig L9



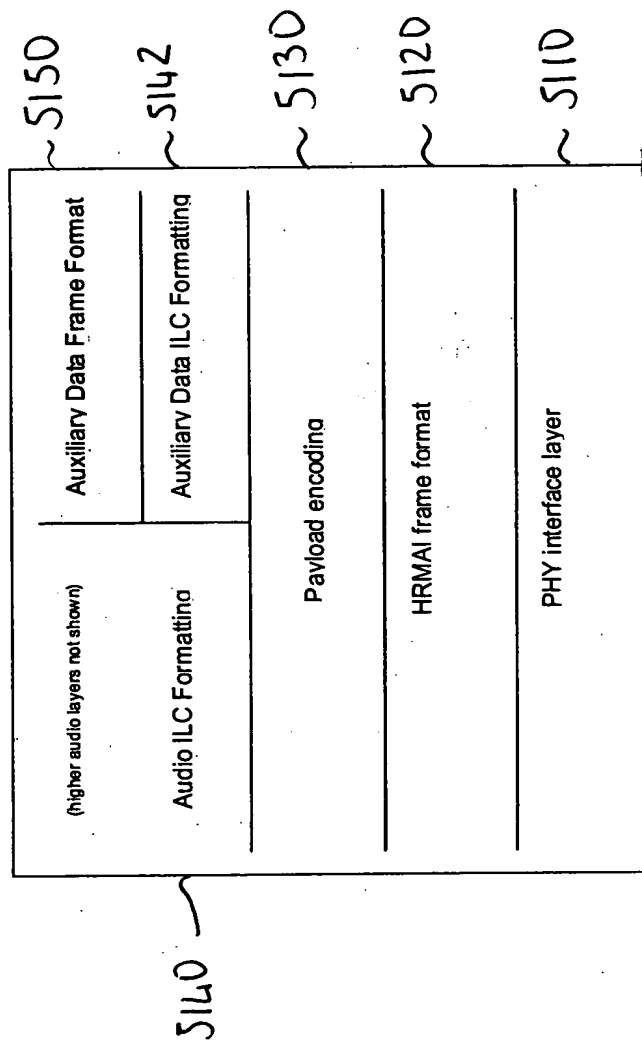


Fig 51

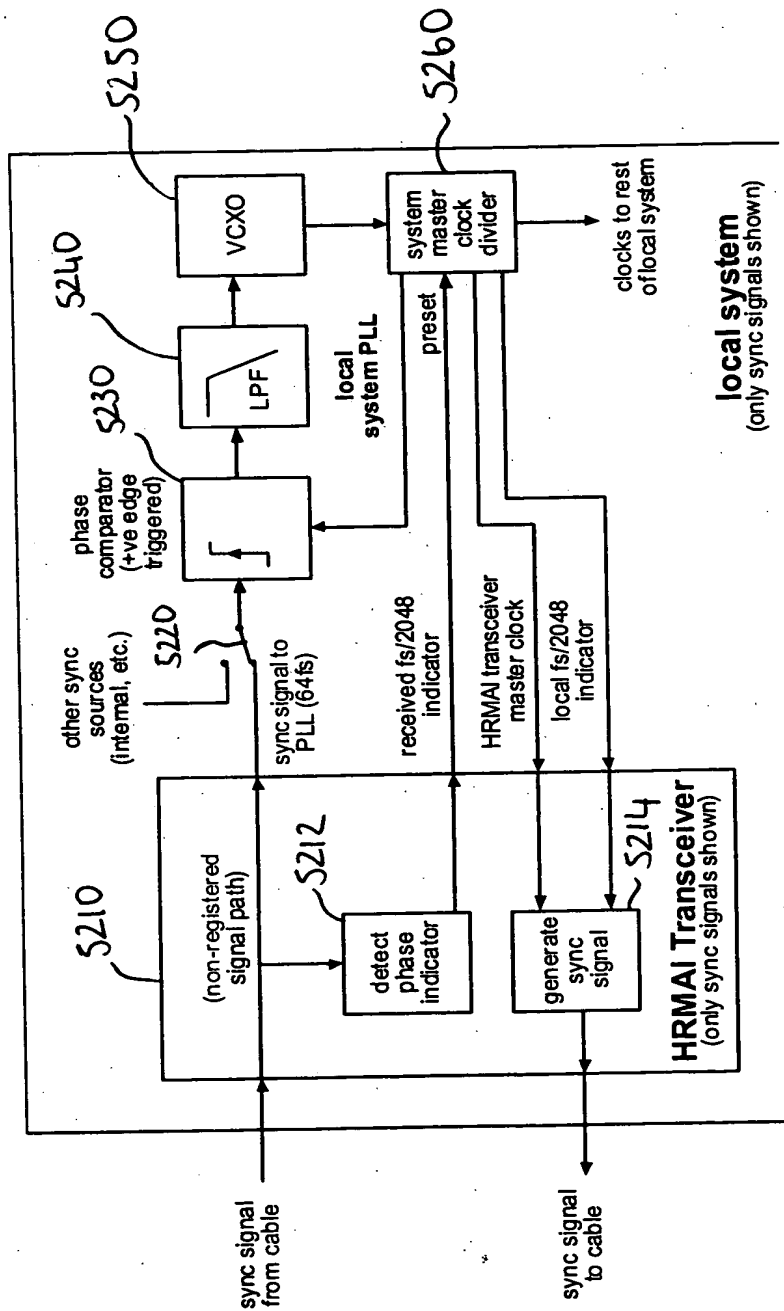


Fig 52

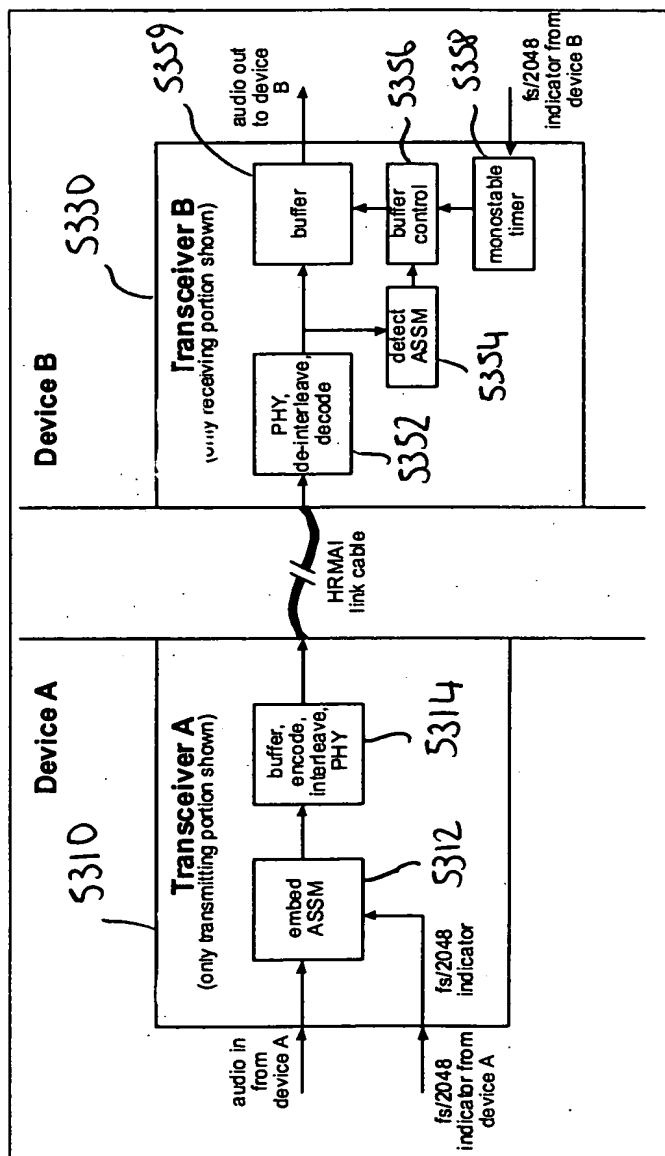


Fig 53